



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/600,799	06/18/2003	Kuo Lung Lei	68,700-015	6228
7590	05/25/2005			EXAMINER
TUNG & ASSOCIATES				WEISS, HOWARD
Suite 120				ART UNIT
838 W. Long Lake Road				PAPER NUMBER
Bloomfield Hills, MI 48302				2814

DATE MAILED: 05/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/600,799	LEI, KUO LUNG
	Examiner	Art Unit
	Howard Weiss	2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 16 March 2005.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-9 and 12-16 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-9 and 12-16 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____.

Attorney's Docket Number: 68,700-015

Filing Date: 6/18/03

Continuing Data: none

Claimed Foreign Priority Date: none

Applicant(s): Lei

Examiner: Howard Weiss

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
 - (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
2. Claims 12, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (U.S. Patent Application No. 2003/0104651) and Lin et al. (U.S. Patent Application No. 2003/0230798).

Kim et al. show most aspects of the instant invention (e.g. Figure 6) including:

- providing a plurality of chip portions **4** on a semiconductor wafer **20** said wafer having a first face and a second, opposite face
- providing a cap **17** covering the active areas on said chip portions
- applying a metalization **6** on one face of said cap
- forming a continuous solder bead **7** on the face of the cap with the metalization using an electroplating process step (Paragraph **[0041]**)
- bringing the cap into face-to-face contact with the wafer such that the chip with the solder bead surrounds and contacts the metalization layer and the area the chip surrounding the active chip area
- melting the solder bead to form a continuous, hermetic seal around the active chip area between the cap and the chip

Kim et al. do not show the electroplating step using a mask and cutting the wafer into individual die. Lin et al. teach (e.g. Figures 15 and 16 and Paragraphs [0099] to [0109]) teach to use a mask during electroplating solder and to cut the wafer into individual die to lower cost (Paragraph [100]). It would have been obvious to a person of ordinary skill in the art at the time of invention to use a mask during electroplating solder and to cut the wafer into individual die as taught by Lin et al. in the process of Kim et al. to lower cost.

3. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. and Lin et al., as applied to Claim 12 above, and further in view of Cho (U.S. Patent No. 5,837,562).

Kim et al. and Lin et al. show most aspects of the instant invention (Paragraph 2) except for the use of spacers. Cho teaches (e.g. Figure 9) to use a spacer **14** to seal the device (Column 5 Lines 11 to 21). It would have been obvious to a person of ordinary skill in the art at the time of invention to use a spacer as taught by Cho in the process of Kim et al. and Lin et al. to seal the device.

4. Claims 1, 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (U.S. Patent Application No. 2003/0104651) and Sparks et al. (U.S. Patent No. 6,062,461).

Kim et al. show most aspects of the instant invention (Paragraph 2) except for applying the layer of metalization on entire face of the cap and removing said metalization not covered by said solder. Sparks et al. teach (e.g. Figures 2 and 3) to apply a layer of metalization **26** on entire face of a cap **12** and removing said metalization not covered by said solder (i.e. layer **28** would remain covered by the solder **7** as shown in Kim et al.) to simplify and complement processing of the cap (Column 4 Lines 23 to 25). It would have been obvious to a person of ordinary skill in the art at the time of invention to apply a layer of metalization on entire face of a cap

and removing said metalization not covered by said solder as taught by Sparks et al. in the process of Kim et al. to simplify and complement processing of the cap.

5. Claims 3, 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. and Sparks et al., as applied to Claim 1 above, and further in view of Lin et al.

Kim et al. and Sparks et al. et al. show most aspects of the instant invention (Paragraph 4) except for the electroplating step using a mask and cutting the wafer into individual die. Lin et al. teach (e.g. Figures 15 and 16 and Paragraphs [0099] to [0109]) to use a mask during electroplating solder and to cut the wafer into individual die to lower cost (Paragraph [100]). It would have been obvious to a person of ordinary skill in the art at the time of invention to use a mask during electroplating solder and to cut the wafer into individual die as taught by Lin et al. in the process of Kim et al. and Sparks et al. to lower cost.

6. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al., Sparks et al. and Lin et al., as applied to Claim 1 above, and further in view of Cho (U.S. Patent No. 5,837,562).

Kim et al., Sparks et al. and Lin et al. show most aspects of the instant invention (Paragraph 5) except for the use of spacers. Cho teaches (e.g. Figure 9) to use a spacer 14" to seal the device (Column 5 Lines 11 to 21). It would have been obvious to a person of ordinary skill in the art at the time of invention to use a spacer as taught by Cho in the process of Kim et al., Sparks et al. and Lin et al. to seal the device.

Response to Arguments

7. Applicant's arguments with respect to Claims 1 to 9 have been considered but are moot in view of the new ground(s) of rejection. Additionally, Kim et al. (e.g.

Paragraph [0015]), Lin et al. (e.g. Paragraph [0100]) and new prior art reference Sparks et al. (e.g. Column 2 Lines 21 to 24) teach to form a solder bead for providing a continuous, hermetic seal around active chip areas between a cap and a chip (see rejections above).

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Paper copies of cited U.S. patents and U.S. patent application publications will cease to be mailed to applicants with Office actions as of June 2004. Paper copies of foreign patents and non-patent literature will continue to be included with office actions. These cited U.S. patents and patent application publications are available for download via the Office's PAIR. As an alternate source, all U.S. patents and patent application publications are available on the USPTO web site (www.uspto.gov), from the Office of Public Records and from commercial sources. Applicants are referred to the Electronic Business Center (EBC) at <http://www.uspto.gov/ebc/index.html> or 1-866-217-9197 for information on this

policy. Requests to restart a period for response due to a missing U.S. patent or patent application publications will not be granted.

10. Papers related to this application may be submitted directly to Art Unit 2814 by facsimile transmission. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2814 Fax Center number is **(703) 872-9306**. The Art Unit 2814 Fax Center is to be used only for papers related to Art Unit 2814 applications.
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Howard Weiss at **(571) 272-1720** and between the hours of 7:00 AM to 3:00 PM (Eastern Standard Time) Monday through Friday or by e-mail via Howard.Weiss@uspto.gov. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy, can be reached on **(571) 272-1705**.
12. The following list is the Examiner's field of search for the present Office Action:

Field of Search	Date
U.S. Class / Subclass(es): 438/ 51, 119	thru 5/18/05
Other Documentation: none	
Electronic Database(s): EAST	thru 5/18/05

HW/hw
18 May 2005



Howard Weiss
Primary Examiner
Art Unit 2814